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February 21, 1953

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



Sentries in Korea

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MEDICINE

Lead on Heart Problems

Isolated cell parts rather than intact cell manufacture cholesterol, believed to play role in artery hardening. Discovery was accidental finding of cancer research.

► **CANCER RESEARCH** has accidentally turned up a finding that may aid in the fight against diseases of the heart and arteries.

The finding is that the fatty chemical, cholesterol, is manufactured in the body by isolated cell parts rather than by the intact cell. Disturbance of cholesterol manufacture is believed to play a role in hardening of the arteries, but heretofore no one has known how cholesterol is made in normal tissues.

The latest discovery on cholesterol was made by Dr. Nancy L. R. Bucher of Massachusetts General Hospital and Harvard Medical School. The American Cancer Society, which supported her research, reports how the discovery was made:

Dr. Bucher had been trying to develop a technique for separating liver cells so that they might be studied singly in suspension. While the isolated cells looked normal, they didn't behave like normal liver cells.

The Boston scientist tested the isolated cells' ability to manufacture normal cell chemicals. To contrast their product with that of a control substance, she used as controls a fine mince of liver in which no whole cells could be seen under the microscope. Dr. Bucher placed the isolated cells in one

laboratory dish and the cell mince in another. To each of the samples she added acetate that contained radioactive carbon atoms.

To her surprise, since previous investigations had contrary findings, the cell mince manufactured from the acetate more radioactive cholesterol than was made by the suspension of cells.

In other experiments, the mince produced more cholesterol than whole liver slices.

The implications of these findings already have excited some scientists concerned with heart and vascular disease research. They, as well as Dr. Bucher, are now attempting to isolate and identify the cell components responsible for cholesterol synthesis.

If it turns out that one of a few enzyme systems are responsible for the production of cholesterol, the search for the cause, prevention and possibly even cure of the most prolific killers of man today may be narrowed substantially. The cholesterol-producing systems may prove controllable by diet or drugs.

This is the first time that a cell-free mince of adult cells has been shown to produce cholesterol in amounts comparable to that produced by the cells.

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ZOOLOGY

Elephant's Kin Can Climb

► **NAME AN** animal that looks like a guinea pig, is equipped with hooves but can climb trees, and whose nearest relative is the ponderous elephant.

The answer: the hyrax, a little rabbit-sized animal found only in Africa and a few places in the Near East.

Just what position this odd creature occupies on the animal family tree has enlivened many a scientific meeting for generations. It looks like a rodent at first glance. But it has hooves, four toes on the forefeet and three on the hind ones. Its teeth are similar to those of elephants, too.

Unlike elephants, however, it is covered with close brown hair. And no one would think of an elephant's cousin being the size of a guinea pig, or a tree-climber.

In the course of time, the little hyrax has been shuffled around taxonomically from the *Rodentia* to *Perissodactyla* (odd-toed hoofed mammals, including horses), and are now fairly secure in their own little order, *Hyracoidea*.

Still, the debate quietly raged: are the hyraxes kin to elephants? A British scien-

tist, Bernard Weitz of the Lister Institute of Preventive Medicine, now thinks he has evidence enough to answer yes.

Testing blood sera of a wide range of species of mammals, Mr. Weitz found that the serological properties of both hyrax and elephant blood were very similar, so much so that it can be assumed the two are closely related, he said.

Mr. Weitz's experiments are described in *Nature* (Feb. 7).

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ANTHROPOLOGY

Stuttering Clue to How Indians Treated Young

► **A STUDY** of stuttering among Indian tribes may be a key to whether various cultures "spared the rod and spoiled the child" or vice versa.

Dr. Edwin M. Lemert, University of California at Los Angeles anthropologist, in a study of stuttering among Indians of the Northwest Pacific Coast, found that

every tribal language studied in the area contained words that meant stuttering.

The ceremonially-rich tribal culture of the Northwest demanded competitive participation of the growing child. A speech defect was a handicap that might cause a family or an entire clan to lose status in the tribe. This led to specific anxieties on the part of both parents and children.

Studies elsewhere have shown that stuttering did not occur among Bannock and Shoshone Indians and, in fact, that they did not even have a word for it. This is probably because the two tribes appear to have made few stringent demands upon growing children. Family treatment of abnormal children was sympathetic but not over-protective.

Indian "cures" for speech defects were unique, Dr. Lemert found. One method was to recite the Indian words for "I give my stuttering to you" through a knothole every morning, and then blow through the hole in order to get the stuttering out of the throat.

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BIOPHYSICS

Need Several Treatments For Radiation Injuries

► **TREATMENT** OF future victims of atom bomb or other radiation injury should be multiple, to combat successive stages of radiation damage, Drs. Thomas J. Haley and Bonnie M. Rhodes of the Atomic Energy Project at the University of California School of Medicine at Los Angeles declare.

They base this advice on the finding that certain drugs prolong the survival time without saving the lives of mice damaged by X-rays.

The drugs are synthetic chemicals related to atropine and known as MK-02, Win-2299 and Bentlyl. They are anti-spasmodic, or relaxing, like atropine, but are less toxic than atropine.

The way these drugs prolong survival time after radiation is apparently by relaxing the intestines and thus decreasing intestinal damage. Early deaths from ionizing radiation in mice, it has previously been reported, are due to intestinal damage.

The drug-induced intestinal relaxation would not be enough to save the lives of the animals, because the relaxing drugs do not affect the bacterial, or germ, and hemorrhagic phases of radiation damage. For this reason, the scientists advise multiple treatment, each step designed to overcome a particular phase of radiation damage.

They report their findings in *Science* (Feb. 6). Chemical names for the drugs used are: tropine benzhydryl ether methane sulfate, or MK-02, made by Merck and Co.; 1-methyl-3-piperidyl-methyl-phenyl-2-thienyl acetate, or Win-2299, made by Winthrop Chemical Co.; and 1-cyclohexylhexahydrobenzoic acid, beta-diethylaminoethyl ester, or Bentlyl, made by Wm. S. Merrell Co.

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PHYSICS

New Magnetic Field Effect

Find that small particles, such as cells and bacteria, move in a magnetic field traversed by an electric current. Effect is called "electromagnetokinetic" phenomenon.

► A NEW way of separating small particles, such as cells, bacteria or possibly viruses, has been discovered by Dr. Alexander Kolin, University of Chicago physicist, as the result of finding a hitherto unobserved phenomenon of magnetic fields.

This is expected to be of major significance for biology and medicine in the study of living tissues and isolated living cells. The effect is called by Dr. Kolin the "electromagnetokinetic" phenomenon.

What Dr. Kolin found is this:

Particles which are electrically neutral migrate, or move, in a magnetic field traversed by an electric current. The migration is perpendicular to the current and to the homogeneous magnetic field that is maintained at right angles to the current.

The particles can be made to move in one direction or the other or to stand still, depending upon the relation of their electrical conductivity to the conducting liquid in which they are placed.

If the electrical conductivity of the particles exceeds the surrounding fluid, they migrate in the direction of the force exerted in the magnetic field upon the current. Particles of lesser conductivity than the fluid migrate in the opposite direction. If the electrical conductivity is the same for particle and environment, no force is exerted.

The force of gravity as well as the force of buoyancy exerted upon a suspended body, like an air bubble in conducting water, can be neutralized.

Important uses of the new phenomenon are expected.

It can be used for separating particles of the same density with much the same result that gravitational or centrifugal forces are used in the ultracentrifuge to separate particles of different density. This will open new possibilities in many fields of research, medical and otherwise. Such particles of nearly equal density but of distinctly different electrical conductivity could be cells of different tissues, algae, bacteria and possibly viruses.

Different shaped particles, such as spherules, rodlets, and platelets, may be separated even when their densities, volumes and electrical conductivities are the same.

Irregular bodies and microscopic particles may have their electrical conductivities measured by finding the conductivity of a solution in which they experience no electromagnetic force. This means that living cells and various tissues can now have their conductivities measured.

Undesired electrochemical effects can be

avoided by using high frequency alternating currents in phase with an alternating magnetic field. This makes it possible to use the method on delicate and living substances without stimulating them and injuring them.

This use of alternating fields is similar to the use of alternating current in diathermy to apply electrical energy to the human body without subjecting it to electrical injury.

Some of the mysteries of life within living matter may be explained by the newly discovered phenomenon.

Some of the unexplained happenings in the ocean, such as electric currents set up by tides and effects of the earth's magnetic field, may also be explained.

To demonstrate the migration effect, Dr. Kolin suspended mustard seeds and whitefish eggs in a concentrated solution of ordinary sugar, or sucrose, made conductive by a small amount of an electrolyte. With the

current and magnetic field used, the eggs and the seeds moved in opposite directions at the speed of about half an inch a second, one centimeter per second.

The direction of migration of the fish eggs can be reversed by reversing the electric current of the magnetic field, and the migration direction coincides with the direction of the force exerted upon the current.

For uncharged particles in magnetic fields, the Kolin effect is similar to electrophoresis, which is the migration of charged particles in electrical fields.

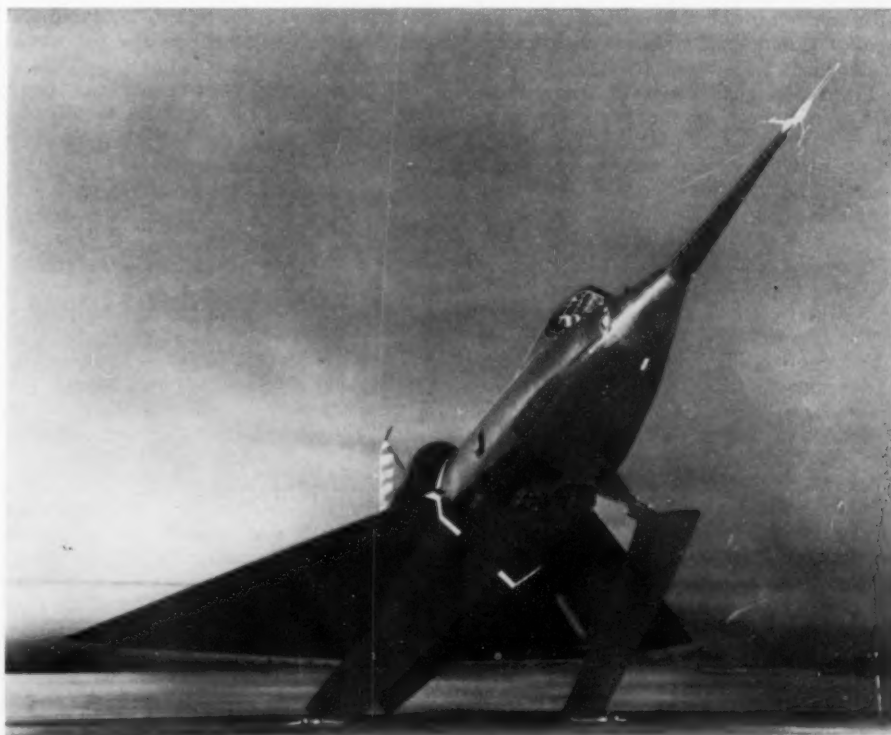
Dr. Kolin made his discovery as the result of trying out all possible methods of getting at the contents of cells without breaking their walls.

As Dr. Kolin developed the facts about his phenomenon, he was surprised to find that no one had described it before. He feels there is no reason that it could not have been described a hundred years ago, but no one has before.

Dr. Kolin is 42 years old. Born in Odessa, Russia, he is a naturalized U. S. citizen and has been in this country since 1934, after he received his Ph.D. in physics at Prague. He has been on the faculty of the University of Chicago since 1946.

His discovery and its possibilities are described in *Science* (Feb. 6). His work was supported by the Abbott Memorial Fund of the University of Chicago.

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SEA-DART ON SHORE—This picture of the Navy's triangle-shaped experimental jet fighter, the Sea-Dart, is the first showing it on shore. The Sea-Dart, built by Consolidated Vultee Aircraft Corp., is the first combat-type airplane in this country employing hydro-skis for improved rough water landing and take-off operations.

GEOPHYSICS

Clue to Jet Streams

► THE TWINKLE of a star may be able to tell weathermen and airline personnel where the jet stream is. The jet stream is an extremely fast, very high narrow band of wind which can slow a plane down almost to a stop or can give it a helping push.

A study made by the Weather Bureau and the U.S. Naval Observatory indicates that the jet stream might be outlined in the air by fast-twinkling stars.

Frank Gifford, research meteorologist, has found that the faster a star twinkles, the more likely it is that there will be a fast wind at high altitude, and the slower a star twinkles, the more likely there will be slow winds at low altitudes. His study is a result of the Bureau's meteorological observations brought together with star twinkling measurements made at the Naval Observatory by Dr. John S. Hall and Alfred H. Mikesell.

The higher and faster the wind is, according to Mr. Gifford, the faster the stars seem to twinkle. Also related to the intensity of scintillation of a star seem to be the wind shears. Wind shears are vertical faces between two currents of wind moving at different speeds. The greater the difference in speed, Mr. Gifford says their findings indicate, the greater the intensity of the twinkling.

The jet stream is sometimes very hard to locate because it is so high and moves around so much in the sky. Few wind measurements are made at those altitudes.

There are indications from other scientists that radio stars also twinkle, and that this twinkling is also related to speed and altitude of winds on the earth. Radio stars are radiation sources which, invisible to the eye or the telescope, can be heard on certain types of radio receivers.

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METEOROLOGY

Weather Defends China

► WINTER STORMS, summer typhoons, rip tides in the Formosa Strait and small treacherous harbors on the China Coast—all these stand in the way of operations against Communist China by the Chinese Nationalists.

From Shanghai down to Amoy—some 600 miles—most of the ports are small, most of them capable of handling nothing larger than junks which can carry 20 to 50 men. The beaches are treacherous tidal flats that change their characteristics as the result of the high tides in the area.

Geographic and hydrographic charts of the area are not up-to-date, and it is believed the work of wind and water would make entering any of these small harbors a tricky business. Much silt is washed down into the harbors. From Amoy one must travel down the coast another 125 miles or so before the next harbor with modern facilities, Swatow, is reached. From Swatow there is nothing that merits the name of harbor until Hong Kong.

The weather is extremely changeable in the 90-mile-wide Formosan Strait, which Nationalist invasion craft would have to cross. In January, February and March, storms can come up suddenly. Rip tides and currents are also strong. In the summer, the typhoon belt moves into the latitude of the Strait.

Outside of fishing junks, the best craft for operations along the South and East China coasts is the PT boat of World War II fame. The Americans used these to operate off the coasts and to make contact with the Chinese during the Japanese occupation.

There are rumors that the Communists are trying to fortify the coastal strip and to move all the fishermen back into the rice fields inland. Yet the task of fortifying and guarding such a long strip of coast would be enormous.

Geography and climate, at least, point more to the feasibility of small, commando-type raids than to a large-scale invasion by the Chinese Nationalists.

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MEDICINE

New Antibiotic Against Fungus-Caused Diseases

► HOPE FOR a successful streptomycin-like remedy for fungus-caused diseases was aroused by formal announcement in Atlanta, Ga., of a new antibiotic effective against such fungi.

The antibiotic's name is candidin. Reports of its isolation and animal testing were made at the Veterans Administration conference on chemotherapy of tuberculosis by Dr. Hubert Lechevalier of Rutgers University, Dr. Albert M. Kligman of the University of Pennsylvania School of Medicine, and Dr. Morris Solotorovsky of the Merck Institute for Therapeutic Research.

These tests showed that the new drug is effective against such fungi as *Candida albicans* which causes thrush and vaginitis; *Blastomyces dermatitidis* which causes infections of skin, lungs, central nervous system, liver, spleen and kidneys; and *Histoplasma capsulatum*, another cause of serious fungi infections.

The drug has not yet been fully refined and its toxicity is still too high to judge whether it will be useful medicine for sick people.

Candidin was isolated in the laboratories of Dr. Selman A. Waksman, Nobel Prize winner who discovered streptomycin. The new antibiotic is distantly related to streptomycin and neomycin since, like them, it is produced from a strain of the fungus-like organisms, actinomycetes. It was discovered in an effort to find an antibiotic to fight Dutch Elm disease. Its efficacy in this tree disease is still unknown but is being studied by Dr. Conrad M. Haenseler of the Rutgers plant pathology department.

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GENERAL SCIENCE

Research of STS Winners

Independent scientific work of high excellence done by final competitors for Westinghouse Science Scholarships coming to Washington for the Science Talent Institute.

► **HIGH SCHOOL** scientists who may be leaders in tomorrow's world of science will meet in Washington on Feb. 26 for the five-day Twelfth Annual Science Talent Institute. They will bring with them exhibits they have made demonstrating projects in their particular field of research.

The young scientists who will participate in the Science Talent Institute will compete for \$11,000 in Westinghouse Science Scholarships. The scholarships range in value from the grand prize of \$2,800 to \$100.

Bird Population Declines

► **SURVIVAL** OF the starling and the sparrow at the expense of such birds as the myrtle warbler, the chickadee and the goldfinch may be one result of civilization.

This is the conclusion of 17-year-old Kenneth Jeremy Harte, senior at Scarsdale High School, N. Y., who made a survey of the effects of suburban development on bird population.

By taking bird censuses for two successive years in the months of November and December, when bird migration is at the minimum, in regions where suburban building operations were going on, the young naturalist finds that a marked decrease in bird life results from the construction of houses for man—"the dominant animal."

By planting trees and shrubs and putting out feeding stations, Mr. Harte believes the residents of the suburbs can coax back many of the birds, although some species are too wary ever to return when their natural habitat has been destroyed. When no provision is made for encouraging them, loss of bird life in the neighborhood is immediately noticeable, according to Mr. Harte's count, but he finds that many birds will accept a handout from congenial human neighbors.

Wind Instruments

► **TONES** FROM the flute, the oboe, the clarinet, the bassoon, the trumpet and the French horn recorded their autographs for John Charles Reynolds, 17-year-old senior at the Glenbard Township High School, Glen Ellyn, Ill. He put his oscilloscope through its paces to demonstrate the four main uses of this instrument.

Sounding your A on a musical instrument gives rise to a basic tone plus overtones that determine the tonal color of the instrument. These waves were produced on Mr. Reynolds' oscilloscope, then photographed so that he could compare them.

Other uses of the instrument studied by the young scientist include the demonstration of "beat" patterns when two tones of slightly different frequencies are heard together, determination of frequency and phase relationships of pairs of waves, and timing measurements of sound and its echoes.

Combining his present interest in music with his enthusiasm for electronic devices, Mr. Reynolds expects to go on with his scientific study of sound during his college career. He hopes eventually to become an engineer.

Turbojet Engine

► **BICYCLE WHEEL** hubs and a stovepipe, along with other more complicated things went into the construction of a turbojet engine by Harry Joseph Cassidy, 18, of the Painted Post High School, Painted Post, N. Y.

The axial-flow turbojet engine is powered by a mixture of air, thrust into the motor by a fan and compressed by stainless steel rotor blades, and propane gas. The mixture, when in combustion, comes out the rear with a powerful thrust. He achieves tem-

peratures of 1500 degrees Fahrenheit in his combustion chamber.

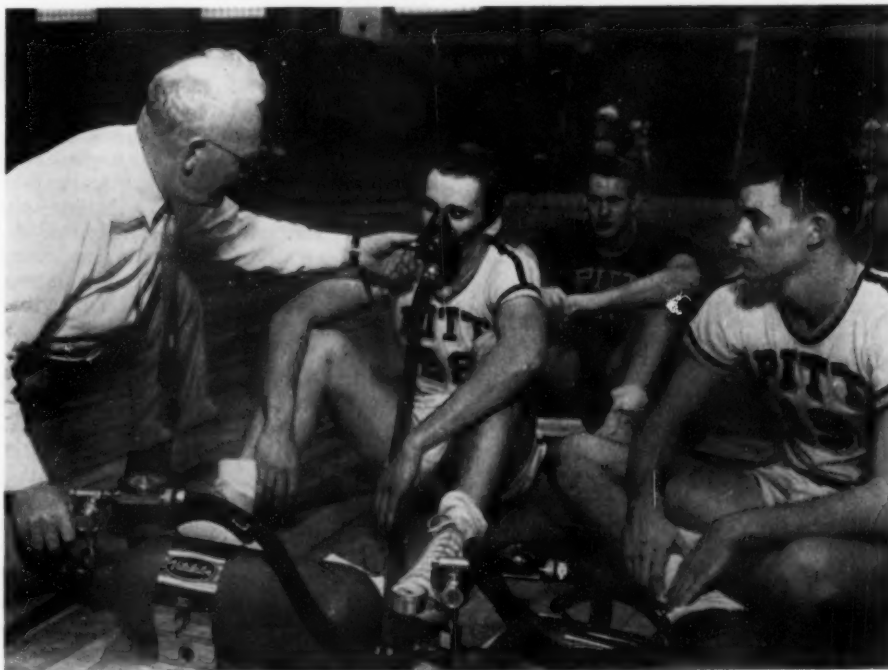
Construction of the engine was marked by at least two failures, from both of which Mr. Cassidy learned lessons. He analyzed what was wrong and either reconstructed parts or provided a different fuel. At one point he added a water cooling and lubricating system to keep the bearings in the bicycle wheel hubs from burning. Combustion chambers were made of ceramic entirely from his own design by a glass works.

Rhinoceros Bones Found

► **BONES** OF a small rhinoceros from the banks of the John Day river in Oregon were discovered by Jack Albert Wolfe, 16, a high school senior of Portland, Ore.

Mr. Wolfe has already begun as a hobby the researches in paleontology which he hopes to make his life's work. During last summer's vacation from the Franklin High School, Portland, he joined a party with similar interests on a camping trip to the Clarno Formation in the north central part of the state. In addition to his finds of the scarce remains of the prehistoric rhinoceros, Mr. Wolfe collected and described specimens of the 50 species of plants found at this site.

By correspondence with scientists in other parts of the country and in England, Mr. Wolfe has attempted to give a more exact date to the time at which these fossilized plants grew. He has attempted to relate the early rhinoceros to others of its kind, whose bones occur in the Rocky Mountains and in China.



OXYGEN DURING REST PERIODS—Tests at the University of Pittsburgh have shown that oxygen given to athletes during rest periods helps them to recover more quickly from fatigue. (See p. 119.)

Measure Radioactivity

► **EXPERIMENTS WITH** photographic methods of measuring radioactivity in uranium ores and in minerals of unknown composition formed the scientific project of 17-year-old Virgil Everett Barnes, Jr., senior at Austin High School, Tex.

Grinding up his rock samples, the young scientist used them, along with samples of known radioactivity obtained from the Atomic Energy Commission, to make exposures on special photographic emulsions made for nuclear studies. He rigged a toy motor to stir the developing solution during the seven hours necessary to develop these scientific pictures of the radioactive rays given off by the rocks.

Improvements in handling the powdered rock samples suggested themselves to Mr. Barnes in the course of his experiments, and he is now carrying on his plans for better chemical separation of the radioactive material from the ores. He expects to continue his college research in pure physics.

Mouse Bone Formation

► **THE FORMATION** of bones in unborn mice was studied by Robert Avery Shore, 16, who began his study of mice embryos at the Jackson Memorial Laboratory in Bar Harbor, Me., during summer vacation from Midwood High School, Brooklyn, N. Y.

In order to carry out his study, he had to devise special techniques for a Caesarean operation so he could deliver the premature mice while keeping the mothers alive for other studies. This specialized operation, he says, was completely of his own devising.

He divided the embryos into two groups for the study of the two successive processes of bone formation. These are, first, the formation of cartilage, and then, from the cartilage, the formation of the mouse skeleton.

He now has two parallel series of embryos representing the two stages from the age of 14 and one-half days after conception to birth. It was possible for him to observe the different rates of development of bone in different parts of the body.

Radio Background Noise

► **ELIMINATION OF** background noise in very high frequency radio receivers was the aim of 18-year-old Dennis Richard Clark, University High School senior, Los Angeles.

One of the limiting factors in very high frequency receiving equipment, he points out, is the noise produced by the first one or two tubes of the receiver.

He conducted experiments with several specialized tube types and circuits to see how well they would perform under actual conditions. The noise was measured with each of the experimental circuits.

The young electronics expert discovered ways of modifying the circuit so as to achieve the least noise possible with his

equipment. He also found that antenna noise is a considerable factor which has to be taken into account.

He concluded that the choice of tubes is seemingly more important than the circuits in which they are used. The tubes, he said, should be triodes because they have low inherent noise. Mr. Clark's low noise receiving equipment, he said, will be used in further experiments with distant stations.

Soil Analyzed

► **ANALYZING THE** soil in a farming township in Indiana with the hope of getting better yields was the project accomplished by a 16-year-old girl who came here recently from Germany.

She is Barbara Erika Hopf, University High School, Bloomington, Ind., who states: "Living in southern Bavaria, Germany, for a good part of my life, I have been used to the conservation and extreme patience taken by the mountain farmer with his little plot of poor, rocky ground. Yet many hill farmers of southern Indiana, planting corn year after year, get discouraged with poor yields, let their soil erode and finally abandon their farms."

She believes that there should be a better understanding of the material Indiana farmers work with: the soil. She took soil samples, chosen according to vegetative covering and topographic location. About 125 samples were collected and analyzed. Miss Hopf was able to map the concentration and location of organic matter, of calcium and other factors.

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MEDICINE

Worst of Flu Over

► **THE WORST** is over so far as the current influenza epidemic is concerned, even though latest reports (Jan. 31-Feb. 7) show an increase in 'flu-pneumonia deaths.

Some communities, particularly on the Pacific Coast and in New England, may have localized outbreaks for a short time to come, but that is all that can be seen from reports—and lack of them—to the U. S. Public Health Service.

The first hint that the epidemic was coming (see SNL, Jan. 17, p. 35) came from reports of outbreaks two and three weeks earlier in Army installations. Now the Army, Navy and Air Force all report that influenza is declining in nearly all military establishments.

The epidemic among civilians seems to be following the same course, with perhaps a two-week lag. Reports from six state health officers, South Carolina, Arkansas, Colorado, Louisiana, Montana and Kansas, state either that the disease has reached its peak or that no increase in cases has occurred.

Considered equally significant is the dearth of reports from middle western

METEOROLOGY

Inversion Blankets North Pacific Ocean

► **INVERSION, THE** blanket of warm air aloft that causes Los Angeles' famous smog, also extends over much of the eastern North Pacific Ocean and influences the weather as far west as Hawaii.

Dr. Morris Neiburger, University of California at Los Angeles meteorologist, has just completed analysis of all available upper air meteorological data for the area, including that gathered in recent Scripps Institution of Oceanography cruises.

The study, which was supported by the Office of Naval Research, has shown how the height and intensity of the layer determine weather typical of particular regions in the large area.

A layer in which the temperature increases with height is called an inversion because it was regarded as a reversal of the normal condition. However, over subtropical oceans the inversion is normal, particularly during the summer season when it is present every day.

Along the coast the inversion is low, with only a shallow layer of cool, moist air below, thus causing fog or low stratus clouds.

The inversion becomes progressively higher farther west. Clouds of greater vertical extent (cumulus) occur, and still farther west become thick enough for occasional showers. The occurrence and intensity of rain in the Hawaiian Islands is partly dependent upon the inversion being raised above its normal position there.

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states. The assumption is that no reports mean the disease is no longer a problem and the epidemic is waning.

The part played by influenza vaccine in checking the epidemic is hard to determine. It is unlikely to have accounted for the decline of cases in military establishments since vaccination of service personnel in this country was largely limited to those at ports of embarkation.

Vaccination of civilians by private physicians probably was not done in time to have much effect. It takes the vaccine at least two weeks to give immunity and the epidemic developed so rapidly that it is doubtful whether many persons got any vaccine two weeks before the 'flu hit their communities.

Hope of preventing influenza completely by vaccination, enthusiastically suggested in some quarters, would depend on everyone getting vaccinated every year, because the protection from the vaccine lasts only about a year. It seems unlikely that an entire population would keep on being vaccinated every year to avoid the chance of an attack.

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SPACE- AND TIME-SAVER—Although both of these drawings tell the same story, use of streamlined drafting represented in the smaller blueprint is being encouraged.

PHYSICS

Exact Ozone Measurement

► **CHANGES** IN the amount of ozone in our atmosphere during the past 50 years are now being charted by William Hoover, astrophysicist at the Smithsonian Institution, Washington.

Accurate records of the amount of the sun's visible light received at high points around the globe have been kept for a 50-year period, and scientists are now going back over these old records to find variations in the amount of green and yellow light received.

This will give an accurate measurement of the amount of ozone in the atmosphere, since the ozone layer in the atmosphere stops about three percent of the yellow-green light coming from the sun.

This ozone layer, a sheet of deadly poisonous gas high above the earth, makes possible all life on earth by this absorption. Ozone, a three-atom-molecule oxygen, is the stuff one smells near an electrical discharge of any sort, such as lightning.

The ozone layer occupies a region between about 15 and 30 miles above the earth's surface. If this deadly gas were brought down to the surface at room temperature, it would make a sheet only about one-tenth of an inch thick.

A rip in this tissue-thin sheet, however, would have deadly consequences for living

things, for the ozone layer absorbs three bands of radiation from the sun. Most important, it shields the earth from the invisible ultraviolet rays, absorbing a great part of the sun's radiation with wavelengths shorter than 3,450 angstrom units. An angstrom unit is four billionths of an inch.

A limited amount of ultraviolet light is essential to keep the earth healthy. It kills germs, but if very much more penetrated the atmosphere it would kill about everything else as well.

The ozone layer also stops some yellow-green radiation, and it is the 50-year record of variations in this light that Smithsonian scientists are now using to trace changes in the ozone layer. No particular significance was attached to the variations at the time they were recorded.

Besides ultraviolet and some yellow-green radiation coming to the earth, the ozone layer stops some infrared, or heat radiation, coming from the earth itself. It may thus be a minor factor in keeping up the planet's temperature.

In general, Mr. Hoover states, the ozone layer is thick in spring and thin in autumn, thin over the equator and thick over the two poles.

Science News Letter, February 21, 1953

ENGINEERING

Blueprint Curlicues Go As Draftsmen Get Scarce

► "IF YOU can make it clear with one line, forget the fancy curlicues," draftsmen are being told these days at the General Electric Company, Schenectady, N. Y.

"Remember our slogan: 'A superfluous line is a waste of time.' In the light of the skilled manpower shortage, we can't afford to waste a minute. Knock out the non-essentials, and don't be afraid to throw in a little judicious free-hand work."

These revolutionary instructions to the shirt-sleeved men behind drawing boards produced immediate results. One blueprint formerly 57 square feet in area shriveled to four square feet. Nothing was sacrificed except extra views and lines that were not needed. The time needed to draw it dwindled from eight days to two.

Science News Letter, February 21, 1953

PHYSIOLOGY

Athletes Get Oxygen During Rest Periods

► **ATHLETES** AT the University of Pittsburgh, Pa., get oxygen during rest periods. The idea is not to "supercharge" them but to help them recover more quickly from fatigue. (See p. 117.)

As evidence of the help given by the oxygen, Dr. H. C. Carlson, director of student health at the University, reports the following results of tests he performed with members of the Pitt basketball squad:

Average pulse rate of group that breathed oxygen increased 45.4% compared to an increase of 73.9% in the group that breathed air. Average respiration rate of the oxygen group increased only 91.4% compared with 106% for the air breathers.

The oxygen was supplied through a mask attached to a compact, portable unit called the Vitalator, consisting of a refillable 40-cubic-foot oxygen cylinder mounted in a light frame with handle. It is made by Mine Safety Appliance Company, Pittsburgh.

Science News Letter, February 21, 1953

ELECTRONICS

Electronic "Brain" To Work Problems

► **GUIDED-MISSILE PROBLEMS** as well as brain twisters involving aircraft design and ballistics soon will be solved for the U. S. Air Force by an electronic calculator that can "remember" 10,000 ten-digit numbers.

The machine uses 1,400 electronic tubes and 7,000 germanium diodes. It is scheduled for "early shipment" to the Wright Air Development Center, Dayton, Ohio, from the General Electric Co. at Syracuse, N. Y., where final tests now are being run.

Science News Letter, February 21, 1953

ARCHAEOLOGY

Identify Clay Statue as Mexico's "Old, Old God"

► A CLAY statue of highland Mexico's "old, old god," excavated from a burial mound on the Veracruz coast ten years ago by a Smithsonian Institution-National Geographic Society expedition, has turned out to be one of the most notable objects of artistry yet found.

When the statue was dug up by Dr. Matthew W. Stirling, director of the Smithsonian's Bureau of American Ethnology, it was in fragments. The pieces were mingled with the bones of a child. Apparently the figure had been deliberately smashed as an offering at some important ancient Indian ceremony.

After several years of laborious work, the statue has now been pieced together by experts at the Museo Nacional of Mexico, Mexico City. It proved to be an extraordinary piece of artistry, reports Dr. Philip Drucker of the Smithsonian. Nearly three feet high, the restored statue is that of an old man carrying on his head a brazier, such as was used by the Aztecs to carry burning coals.

Once the statue was restored, says Dr. Drucker, it was not difficult to identify it with the fire god known to the Aztecs as Xiuhcutli, a sort of Mexican Prometheus, the most important of the minor gods whose cult flourished during the time of the Aztecs through the Valley of Mexico. He also was known as Huehuetotl, the old, old god—the most ancient of the Aztec divinities, upon whose aged body the job of carrying fire to the world was heavy.

Science News Letter, February 21, 1953

NUTRITION

Fresh Cabbage Helps Put Vitamin C in Meals

► NEWS THAT there will be plenty of crisp, fresh new cabbage in markets generally throughout the country is good news, because cabbage is an excellent source of vitamin C and at this late winter season, family meals are likely to be skimpy in this vitamin.

Vitamin C is also known as the anti-scurvy vitamin and by its chemical name, ascorbic acid. Besides preventing and curing scurvy, it plays a big part in helping to keep body tissues healthy.

To get the most vitamin value from cabbage, as well as for appetizing crispness and flavor, serve it raw in salads and fresh relishes, advise nutritionists of the U. S. Bureau of Human Nutrition and Home Economics.

For a hot vegetable, save vitamin value and time by quick cooking in a small quantity of water. Raw cabbage combines well with many different foods so that cabbage salad need never become monotonous.

Here are some suggested combinations: Shredded cabbage, orange sections and

crushed pineapple; shredded cabbage with slivers of celery, carrots and raisins; shredded cabbage with onions sliced in thin rings, mixed with well-seasoned mayonnaise or other salad dressing and served on a cabbage leaf.

Sweet potatoes are another good vitamin C source at this season because they keep a high proportion of their vitamins during curing and storage. One medium sized sweet potato gives at least one-third of the vitamin C needed for the day.

Citrus fruits, tomatoes and fresh greens are other good vitamin C sources. One quart of milk supplies almost half the minimum daily requirement.

Science News Letter, February 21, 1953

INVENTION

Patented Devices Aid Spring Training

► SPRING TRAINING being nearly upon us, inventors are turning to baseball as a field for their talents. Among recent inventions are a new kind of mask for umpires and catchers, and a new pitcher's practice target.

The mask, invented by Hugo Goldsmith, Cincinnati, and assigned to Sport Products, Inc., of the same city, permits the umpire to see better, a feature said to be desired by many ball players. The face piece is formed of one piece of light-weight metal shaped so that there is a chin piece, a bar across the nose, one across the forehead, and one rising above the head.

The side pieces are set far enough back so the field of vision is widened. The whole is cushioned and the harness is so designed that the mask cannot slip down. Patent number is 2,627,602.

The pitcher's control practice target consists of a frame holding a canvas upon which can be painted either a bull's-eye or a representation of a player at bat. The canvas is held securely at the top, but allowed to ride up, upon impact of the pitched ball, from the bottom. Inventor is Chester J. Lecznar, Detroit, and his patent number is 2,628,097.

Science News Letter, February 21, 1953

MEDICINE

Women Can Have Hemophilia, Too

► WOMEN CAN have hemophilia, contrary to popular and medical reports, four Dallas scientists reported at a Symposium on Blood in Detroit.

It has been thought that only males had this hereditary "bleeder's disease," while the women of the family transmitted it without having it themselves.

The report on female hemophilics was made by Drs. J. M. Hill, Gwendolyn Crass, John Ellis and K. P. Wittstruck of the Wadley Research Institute and Blood Center, Dallas, Texas.

Science News Letter, February 21, 1953

IN SCIENCE

VITAL STATISTICS

Average Life Length Up 4 Years in Decade

► THE AVERAGE American wage earner's length of life increased by a little over four years in the last decade, the Metropolitan Life Insurance Company announced in New York on the basis of 1952 figures for its industrial policyholders.

Reaching almost the Biblical three-score-and-ten, the average length of life for this group now is 68 and one-half years.

In spite of a record-breaking polio epidemic and a sultry summer which caused an unusually large number of deaths from heat exhaustion, the death rate among this group was on a level with the all-time low recorded in 1950.

The death rate for each of the major chronic diseases of middle and later life declined. Mortality from diseases of the heart, arteries and kidneys was down almost two percent. Cancer deaths declined from 123.5 per 100,000 in 1951 to 122.5 per 100,000 in 1952. Diabetes deaths went down from 15.2 to 14.0 per 100,000.

Deaths from disorders of pregnancy and childbirth reached a new low in the insurance experience. Death rates from pneumonia and influenza, and from the principal communicable diseases of childhood all were at all-time lows.

The tuberculosis death rate among these policyholders dropped 25% during the year to a new low of 13.5 per 100,000.

Science News Letter, February 21, 1953

ZOOLOGY

Watch Dogs Help Guard Strategic Korean Posts**See Front Cover**

► SHOWN ON the cover of this week's SCIENCE NEWS LETTER is a U. S. Air Force guard standing duty at an airstrip of the Eighth Fighter Bomber Wing in South Korea, aided by a specially-trained watch dog.

At present, there are well over 2,000 such dogs being processed, trained and used by the armed services. Although during the last war, dogs were borrowed from their individual owners, those required are now being bought outright, a more practical, less expensive system, it is reported.

Army dogs are not used as attack dogs, but simply to detect and indicate the presence of unauthorized persons. If cornered or to protect their handlers in an emergency, they may attack, but they are not trained primarily for that purpose.

Science News Letter, February 21, 1953

SCIENCE FIELDS

CHEMISTRY

Preservatives Protect Wooden Fence Posts

► FARMERS AND stockmen may be saved a good deal of money through new types of preservative treatment for wooden fence posts.

Two scientists at the University of California, L. W. Neubauer and R. F. Grah, recently completed tests with the preservative, pentachlorophenol, in diesel oil.

Using penta, which is known to be a good preservative of wood and is easy to handle, they conducted tests on the absorption rates of this chemical in posts of various species of wood. The treatments included common cold soaking, incising, end coating, burning and spraying. Incised posts absorbed the most oil, but may not prove the most durable if incisions are too deep or too numerous.

The tests showed that although a wide range of absorption exists in different species, the sapwood of hardwoods generally absorbed treatments more rapidly than the sapwood of softwoods.

Science News Letter, February 21, 1953

OPERATIONS RESEARCH

Growth "Yardstick" For Tastier Vegetables

► TASTIER FROZEN vegetables could be available if farmers followed a new growing "yardstick" announced by C. W. Thornthwaite of Seabrook Farms, Inc., Bridgeton, N. J., in a report to the Operations Research Society of America. The vegetables would always be picked and processed on the day they just ripen.

A pea plant is used as a yardstick for the planting and harvesting program. The growth rate of other plants—sweet corn, snap beans, lima beans or spinach, for instance—is tied to that of peas.

The pea plant was chosen as a yardstick because it grows from one growing point alone, that is, it comes up and forms a node, grows from this to form another node, etc. The nodes develop at a high rate in summer, and at slower rates in the early spring and late fall. Using the average of several years, this node development is translated into "growth units."

Seeds of the desired crop are planted according to the "growth unit days" that should lapse before the harvesting time most appropriate for the best use of available manpower and harvesting and processing equipment. To get, for instance, 15-acre plots of peas just ripe for harvesting one plot daily, one field would be planted on March 5, the neighboring field on March 9. Planting season can be shortened

by using slower-growing varieties for the later harvest dates. In this way, the plants mature at intervals throughout the harvest season, the faster-growing varieties first, the slower-growing ones later.

This system's virtue is that the only uncertainty in the schedule is the weather during the harvest season itself. Details for making the climatic calendar appear in the *Journal of the Operations Research Society of America* (Feb.).

Science News Letter, February 21, 1953

MEDICINE

Cancer, Not Alcohol, Causes "Whisky Tenors"

► IF YOU think that "whisky tenors" are all victims of Demon Rum, think again. Chances are that most of them may be suffering from cancer of the larynx.

Dr. Joel Pressman, professor of surgery in the School of Medicine at the University of California at Los Angeles, has pointed out that cancer of the larynx early manifests itself by prolonged hoarseness.

"It is the only form of cancer which shows such an obvious symptom in its early stages," he said, "yet few people go to the doctor until the condition has been prevalent for six months or more."

With early diagnosis, most cancers of the larynx can be successfully treated with modern surgical and radiological techniques, and a normal or nearly normal voice be restored.

"There is no definite evidence that smoking is a contributing factor to cancer of the larynx," Dr. Pressman says. "On the other hand, there is no conclusive proof that it is not. Cancer of the larynx only constitutes two percent of all types of cancer."

Science News Letter, February 21, 1953

MEDICINE

Question Easy Life Promotes Heart Ills

► WHETHER THE "life of Reilly" really favors earlier occurrence of coronary heart disease, high blood pressure and diabetes is not known and should be investigated through research throughout the world.

The need for this study was pointed out by Dr. Paul D. White, internationally known heart specialist, on receiving the first Albert Lasker Award for achievement in the field of cardiovascular diseases. The award consists of \$1,000 and a gold statuette of the Winged Victory of Samothrace.

The "life of Reilly" research would have to be done abroad, Dr. White thinks, because several decades of a leveling process in the United States have resulted in it being difficult to compare hundreds or thousands of hard laborers who are not over-nourished with an equal number of men in the professions, business and public life who are over-nourished and leading a soft life physically.

Science News Letter, February 21, 1953

CYTOLOGY

New Cells From Embryos Frozen at Minus 320° F.

► LIVE BABY chicks from embryos that were frozen, thawed and then incubated in artificial eggs will, it is hoped, soon hatch out in laboratories at St. Louis University, Mo.

The experiments, which have been going on for over two years, were reported by Prof. Basile J. Luyet at the meeting of the Society of University Surgeons in St. Louis.

The embryos were first treated with ethylene glycol and then frozen in liquid nitrogen at 320 degrees below Fahrenheit. To thaw them, they were plunged into a warming bath of Tyrode solution, containing various salts, at a temperature of about 100 degrees Fahrenheit. The embryos were then transferred to a watch glass containing Tyrode solution, and placed on a warming stage under the binocular stereoscopic microscope to watch the heart.

The first successful experiment was completed in 1950 after nearly 100 unsuccessful attempts. Since then, 38 out of 65 embryos have survived the solidification and freezing. Many irregularities of the heart beat were seen, and some frozen embryo hearts continued to beat for only a half hour after the warming.

Some embryos, however, have survived the freezing and thawing long enough to develop new cells. In the current experiments, these embryos are being incubated in an environment as nearly as possible like that in the hen's egg.

Science News Letter, February 21, 1953

INVENTION

Automobile-Airplane Combination Patented

► A COMBINATION automobile-airplane which, according to the inventor, gets around the problems of the different structural and weight characteristics of planes and cars has been invented.

In airplanes, the job is to minimize as much as possible the gross weight and the overall proportions of the plane. Thus when the automobile part of the combination is detached from the wings, tail structure and motor, it is at a disadvantage on the highway.

Theodore P. Hall, San Diego, Calif., who received patent 2,619,184, has designed a combination automobile-airplane fuselage which has a central unitary frame disposed vertically and passing through the fore and aft axis of the body. This provides the strength necessary in an automobile, supports all of the principal loads, and provides the logical place to which to attach the airplane components.

Another patent, for improvements on the same vehicle, provides for separate controls to be used for flight and for highway travel. This is patent number 2,619,301.

Science News Letter, February 21, 1953

TECHNOLOGY

New Clothing for Fighters

To clothe men properly, designers have produced plastic long underwear, bullet-proof vests, "thermos-jug" boots, and a 19-pound cold-weather outfit.

By ALLEN LONG

► PROPER CLOTHING is one of the most important weapons that the armed forces must give their servicemen. Like a machinegun, an ack-ack gun, or a bazooka, clothing is used to fight an enemy. The enemy is an environment to which the serviceman is not adjusted. Cold winds, icy waters or thin atmosphere can be as dangerous to the fighting man as the enemy's bullets. He may use 75% of his energy just staying alive.

To give the American GI the proper clothing, experts have gone into huddles and produced some unique fashions that are making headlines. You will not see these fashions in this year's Easter parade. Chances are that most of the suits available have been shipped to Korea where they are needed.

Among the new things the serviceman is wearing are these: foam-like plastic underwear which also doubles at the same time as the outer garment; bullet-proof vests with protective plates sewn in alarmingly loose; "itchless" underwear for sailors; and boots so warm that soldiers call them "thermos jugs." A weird-looking, skin-tight "space suit" now clothes the jet-age test pilot.

Ship Clothes in Cans

And to top it off, clothes now are being shipped in cans just like live lobsters for the housewife who wants her sea-food fresh.

The suit that has made the biggest splash so far is the Army's Coldbar uniform. It keeps its wearer warm whether his skin is wet or dry. Both testers and skeptics have donned the five-pound outfit and jumped into the chilly waters of the Potomac River. Even the skeptics have been convinced that the Coldbar uniform is really something to talk about.

Made of vinyl plastic that resembles sponge rubber, the uniform works on the "vapor barrier" principle. The idea is to trap body heat in tiny holes in the fabric and to hold the heat there.

A soldier wearing the Coldbar uniform can fall off a treacherous footbridge as he tries to cross an icy Korean stream. When he hits the water, it will feel like someone poured ice water down his neck. The suit will keep him afloat in the water, even if he's wearing a field pack. In a short time, the ice-cold water will begin to warm up, and in a few minutes, the soldier will feel warm as toast.

The skeptics did not believe that until they tried out the suit themselves. They are convinced now that the outfit does all the Army says it does. Said one: "Although I was soaked literally to the skin, that water began to lose its chill and soon felt quite cozy."

Coldbar uniforms come in two pieces, jacket and trousers. The serviceman wears nothing under the suit at all. Theoretically he needs nothing over the suit. But since the plastic material can be torn, usually a "covering" of a regular Army jacket and trousers is slipped over the suit to protect it from jagged twigs and sharp rocks. If the suit is torn anyway, a little glue patches it up.

When still in the design stages, a few Coldbar uniforms reportedly were sent to Korea for actual field tests. Once a soldier had tried it out, the report goes, he was reluctant to give it up, even if it was not perfect. Today, thousands of the perfected uniforms are clothing troops in Korea.

Hard-hitting Marines in Korea now are sporting what they call "shrap-jackets." Weighing 7¼ pounds, the jackets are said to be from 90% to 95% successful in preventing serious wounds of the torso, although the Navy's Bureau of Medicine and Surgery says accurate statistics will not be available until a survey in Korea is completed.

The jackets are made of glass cloth and a synthetic resin. Called Doron, the material is curved to fit the contour of the body. "Plates" of the material are an eighth of an inch thick and about five inches square. They are sewn into the pockets of heavy nylon vests and overlap like fish scales.

Stops Bullets Completely

To the Marine, the jacket may look alarmingly unprotective. But to a chunk of lead from a .45 caliber pistol or machinegun, the jackets are tough, even at point-blank range. Those bullets are stopped completely. Fragments from a United States-type grenade exploding at three feet are arrested by the jacket before they critically hurt the Marine. Devastating mortar blasts at 10 feet also are less of a hazard to Marines wearing "shrap-jackets."



LATEST MILITARY FASHIONS—The sailor on the left models the Navy's new cold-weather uniform which weighs 19 pounds, and which keeps him warm by trapping air between its many layers. The soldier (right) sports the Army's Coldbar plastic underwear which keeps him warm, as well as afloat, even in icy rivers.

The secret of the jacket lies in its material and in its construction. The many layers of resin-impregnated glass cloth cushion the bullet or shrapnel as it enters the jacket. By not pressing the layers together tightly, designers have increased the cushioning effect of the vest and thus have increased its effectiveness.

Meanwhile the Army announced an "armored jacket" of its own which also now is serving front-line soldiers in Korea. Made of laminated nylon covered with a waterproof outer shell, the jacket is expected "to reduce battle casualties considerably."

"With its use, it is believed that wounds which otherwise result in death will be reduced to injuries only, and the severity of wounds incurred will be lessened," the Army said.

A companion piece to the armored jacket recently has been developed to protect the soldier's hips, abdomen and groin. When "uppers" and "lowers" are worn, the entire torso is protected.

Statistics on the Army's version of the bullet-proof jackets show that the garments deflect about 65% of all types of missiles and reduce chest and upper-abdominal wounds by about 60%.

"Itchless" Underwear

The Navy got a few laughs when it announced its new waffle-weave "itchless" underwear. The laughs came mostly from newspaper readers, though, and not from scratching sailors. Made entirely of cotton, the underwear was a part of an intense Naval project aimed at clothing men warmly who must stand watch on wave-drenched decks above the Arctic Circle.

The underwear is much warmer than the woolen suit it replaces and wears twice as long. Its waffle-weave design creates a three-dimensional honeycomb effect which provides tiny air pockets in the fabric to hold in the sailor's heat and keep the cold out. It will be issued to Arctic-bound sailors as soon as they squirm and scratch their way through the present supply of woollies.

The Navy awarded its highest civilian honor—the Distinguished Civilian Service award—to two Brooklyn men who perfected a cold-weather uniform recently adopted by the Navy. Salvatore V. Gianola and Dominick E. Maglio designed a suit of

clothing that weighs only 19 pounds and is guaranteed to protect men at 40 degrees below zero. One of their developments is the insulated rubber thermoboot which has produced spectacular results in Korea by protecting the feet of U. S. troops from frostbite. Grateful soldiers affectionately call boots of this type "thermos jugs."

Jet-Age Suit

That strange-looking, skin-tight, man-from-Mars suit profusely pictured in the nation's press recently is the Air Force's answer to the test pilot's problems of stratospheric flight in this jet age.

Called simply the T-1, the suit at present bridges the widening gap between man's super-modern airplanes and his body which cannot be made over to fit the planes.

Designed at the Aero-Medical Laboratory at the Air Force's Wright-Patterson Air Development Center, Dayton, Ohio, the suit was created to save the lives of pilots at high altitudes if an enemy bullet or mechanical troubles cause the plane's cabin pressure to fail. The suit is worn uninflated, but goes into operation automatically when the air pressure around it gets too low.

Such an outfit, already credited with saving one life, is needed because at the high altitudes now attained by some of America's latest aircraft, a pilot can be killed in seconds if air pressure around him goes down. Water in his body will boil at 60,000 feet, clogging his circulatory system with air bubbles and actually causing his body to double its size.

Furthermore, at high altitudes the pilot needs oxygen under pressure to satisfy the breathing requirements of his body. Plain oxygen is not sufficient. It must be compressed to "supercharge" the pilot's lungs. If he does not have it, he dies. And with new jet planes zipping through the skies at dizzying angles, the forces on the test pilot's body are terrific. He needs an

"anti-G" suit also which counteracts the magnified forces of gravity on his body.

The T-1 fits the bill. It has a built-in anti-G device and it applies pressure to the pilot's body when cabin pressure fails. It even has an emergency bottle of compressed oxygen which the pilot straps to his thigh. While plunging downward through the thin air in bailouts, the pilot uses the compressed oxygen until he reaches a level where he can open his parachute and breathe the air.

These, by no means, are all of the recent developments in military clothing. The garments and suits described here, however, are some of the latest. It may seem that the pinnacle has been reached, that man has met the last challenge. But he has not.

As science pushes the frontiers higher into the sky, and deeper into the sea, and as wars and economics force man to go to climates to which he is not accustomed, he will surpass even these triumphs in textiles.

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BIOCHEMISTRY

Two New Antibiotics Available to Physicians

► DOCTORS ARE about to have two more antibiotics, so-called mold remedies, to prescribe for their patients.

One, called magnamycin, which is effective against germs that resist penicillin, aureomycin and terramycin, is now being made available to physicians by its manufacturer, Chas. Pfizer and Co. of Brooklyn, N. Y.

The second is a new antibiotic against tuberculosis which has undergone trials at Fitzsimons Army Hospital, Denver. It is called Viomycin, comes from an organism found in Florida soil, and will be available to physicians soon, state the manufacturers, Parke, Davis and Company, Detroit.

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BARGAIN PARADISES OF THE WORLD

Do you know where to find an island right near the U. S. so nearly like Tahiti in appearance, beauty, and color even the natives say it was made from a rainbow? (And that costs here are so low you cannot only reach it but also stay a while for hardly more than you'd spend at a resort in the U. S.?)

Do you know where to find the world's best mountain hideaways or its most dazzling surf-washed coastal resorts, where even today you can live for a song?

Do you know where it costs less to spend a while, the surroundings are pleasant, and the climate well night perfect in such places as Guatemala, Mexico, the West Indies, Peru, France, along the Mediterranean, and in the world's other low cost wonderlands?

Or if you've thought of more distant places, do you know which of the South Sea Islands are as unspoiled today as in Conrad's day? Or which is the one spot world travelers call the most beautiful place on earth, where two can live in sheer luxury, with a retinue of servants, for only \$175 a month?

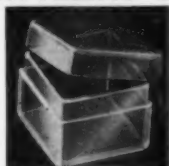
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• Books of the Week •

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ALCOHOLISM, 1941-1951: A Survey of Activities in Research, Education and Therapy—Staff, Yale Center of Alcohol Studies—*Quarterly Journal of Studies on Alcohol*, 90 p., paper, \$1.00. Not so much an analysis of the problems arising from alcoholism as an indication of the major sources of data in this field and the major types of action programs.

THE ANTHROPOLOGY OF IRAQ: Part II, Number 2, Kurdistan and Number 3, Conclusions—Henry Field—*Peabody Museum*, 174 p., illus., paper, \$6.85. What is now Iraq, says the author, formed part of the nursery of *Homo sapiens*. Here arose the science of numbers, calculations and the plotting of the stars in their courses. Here developed and flourished one of the centers of civilization.

BACK DOWN THE RIDGE—W. L. White—*Harcourt, Brace*, 182 p., \$3.00. Telling the poignant story, in the GI's own words, of how that young American boy, just under 20, got clobbered (wounded) on a desolate ridge in Korea and the heroic and skillful things that were done for him to save his life and bring him back home.

BLOOD-BROTHERS: An Ethno-Sociological Study of the Institutions of Blood-Brotherhood With Special Reference to Africa—Harry Tegnaeus—*Philosophical Library*, 182 p., illus., \$12.00. Description of a custom of sealing a pact or alliance by mixing the blood of the participants and sometimes drinking the mixture.

BUILDING AMERICA'S HEALTH: Volume 5, The People Speak, Excerpts From Regional Public Hearings on Health—President's Commission on the Health Needs of the Nation—*Govt. Printing Office*, 521 p., paper, \$2.50. This was the chance for the citizen to speak up about his individual health problems and those of the community. Selections from the testimony of nearly 400 witnesses.

CAN RUSSIA SURVIVE?: An Examination of the Facts and Figures of Soviet Reality—F. B. Czarnowski—*Philosophical Library*, 128 p.,

\$2.75. A frankly prejudiced author, writing from London, presents the dark side of Soviet Russia which, he says, is "the very face of horror." But, he says, "life behind the iron curtain is slowly but surely going out."

CATALOG AND PRICE LIST EASTMAN ORGANIC CHEMICALS—Distillation Products Industries, Eastman Organic Chemicals Department, 38th ed., 224 p., paper, free upon request to publisher, Rochester 3, N. Y.

COMPACTION OF EMBANKMENTS, SUBGRADES, AND BASES—L. D. Hicks, Chairman—*National Academy of Sciences-National Research Council, Highway Research Board Bulletin* 58, 84 p., illus., paper, \$1.50. There is no other single treatment which produces so marked a change in the physical properties of soils at so low a cost as does compaction, the bulletin indicates.

COMPARATIVE EMBRYOLOGY OF THE VERTEBRATES—Olin E. Nelsen—*Blakiston*, 982 p., illus., \$8.00. A liberally illustrated text so arranged that the instructor may select certain chapters for presentation to his class one year while others are picked for a fresh approach the following year.

COPAN CERAMICS: A Study of Southeastern Maya Pottery—John M. Longyear, III—*Carnegie Institution of Washington*, 114 p., illus., \$5.25 paper, \$6.25 cloth. The ruins of Copan lie in the valley of the Copan River, in the extreme western part of Honduras. The earliest occupants of the site had an advanced ceramic technique and made tortillas from corn.

CULTURE: A Critical Review of Concepts and Definitions—A. L. Kroeber and Clyde Kluckhohn—*Peabody Museum*, 223 p., paper, \$5.25. The authors conclude that, although we have a fairly well delineated concept of culture, we have as yet no full theory of culture.

DERMATOLOGY: A Textbook for Nurses—Herbert Rattner—*Saunders*, 270 p., illus., \$4.25. A textbook for student nurses to help them recognize and give proper care to skin troubles. It contains valuable information for the general reader who would like to have a "skin you love to touch."

DICTIONARY OF WORLD LITERATURE: Criticism, Forms, Technique—Joseph T. Shipley, Ed.—*Philosophical Library*, rev. ed., 453 p., \$7.50. A technical dictionary of literary and dramatic terms.

EDUCATIONAL EXCHANGE GRANTS—International Information Administration, Department of State—*Govt. Printing Office*, 27 p., illus., paper, 10 cents. Describing the opportunities available for students and teachers to study abroad, and for foreign students, teachers and lecturers to come to this country.

ENDOCRINE TREATMENT IN GENERAL PRACTICE—Max A. Goldzieher and Joseph W. Goldzieher, Eds.—*Springer*, 474 p., illus., \$8.00. Written for the practicing physician by 21 clinicians from many fields of medicine.

ETHNOBOTANY OF THE RAMAH NAVAHO—Paul A. Vestal—*Peabody Museum*, 94 p., paper,

\$2.50. Indicating the knowledge the Navaho of the Ramah region has of wild and cultivated plants and their uses in medicine, ceremonials, personal toilet and hand crafts.

EVOLUTION IN ACTION—Julian Huxley—*Harper*, 182 p., illus., \$2.75. One obvious task for the free world to undertake, states the author, is the scientific exploration of human possibilities, and the eugenic possibilities are now subsidiary to the psycho-social ones.

THE GREATER INDUSTRIAL HEALTH—Lemuel R. Boulware—*Mellon Institute*, 10 p., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

HANDBOOK FOR CHEMISTRY ASSISTANTS—Grant W. Smith, Chairman—*American Chemical Society*, 32 p., paper, free upon request to Fisher Scientific Company, 717 Forbes Street, Pittsburgh 19, Pa. Practical help for the inexperienced graduate student who has been selected as teaching assistant. Safety measures for dangerous chemicals and radioactive materials are included.

HEARING WITH OUR EYES: A Lipreading Textbook for Teachers of the Deaf and Hard of Hearing Child with Manual for Accompanying Workbooks—Ena G. Macnutt—*Volta Bureau*, 125 p., paper, \$4.50. Presenting lessons that have been used successfully by the author for years in public schools.

I DRANK THE ZAMBEZI—Arthur Loveridge—*Harper*, 296 p., illus., \$4.00. The dramatic story of a safari in Nyasaland, Africa, where the author studied wildlife and brought back to Harvard almost 4,000 specimens of fauna.

IMPROVEMENTS IN THE CONTROL OF RIBES BY CHEMICAL AND MECHANICAL METHODS—H. R. Offord and others—*Govt. Printing Office, USDA Circular No.* 906, 72 p., illus., paper, 35 cents. Reporting results of the search for large-scale and economical methods for eradication of the cause of blister rust of pine trees.

INDUSTRIAL DEVELOPMENT AT HOME AND ABROAD—PROBLEMS AND PROSPECTS—Murray Shields and others—*American Management Association*, 28 p., paper, \$1.25.

INDUSTRIAL HYGIENE—Industrial Hygiene Foundation, H. H. Schrenk, research director—*Mellon Institute*, 2 p., illus., paper, free upon

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INDUSTRIAL RESEARCH AND DEVELOPMENT: A Preliminary Report—Bureau of Labor Statistics—Department of Defense Research and Development Board, 42 p., paper, free upon request direct to publisher, Washington 25, D. C. The companies responding to this survey spent almost two billion dollars for research, of which almost half was financed by the federal government.

AN INTRODUCTION TO CO-OPERATIVE PRACTICE—International Labour Office, 50 p., paper, 50 cents. The purpose of this booklet is primarily to analyze briefly and in simple terms, in the light of broad international experience, the principal types of society likely to be of value in underdeveloped communities, the needs which determine their establishment, and the chief conditions likely to affect their organization.

LIPREADING WORKBOOK TO ACCOMPANY HEARING WITH OUR EYES—Ena G. Macnutt—Volta Bureau, 28 p., illus., paper, 35 cents. Exercises for children learning lipreading.

A MANUAL OF CLINICAL ALLERGY—John M. Sheldon, Robert G. Lovell and Kenneth P. Mathews—Saunders, 413 p., illus., \$8.50. For the physician who wants to establish an allergy practice.

THE MYSTERY OF OTHER WORLDS REVEALED—Harland Manchester and others—Sterling, 144 p., illus., \$2.95. An attractive, bountifully illustrated book in which fact and fancy mingle.

THE NATIONAL RESEARCH COUNCIL REVIEW 1952—National Research Council, Canada, 271 p., illus., paper, 75 cents. Reporting the researches carried on during the year by the various scientific divisions.

THE NEW FORCE: The Story of Atoms and People—Ralph E. Lapp—Harper, 238 p., \$3.00. The story of atomic research from its backgrounds in theory to the development of the hydrogen bomb and the promise of atomic power for industry and electricity. Dr. Lapp is the author of "Must We Hide."

ONE-POT COOKERY—Eidola Jean Bourgaize—Association Press, 126 p., \$2.50. A book in-

tended to make any enthusiastic hiker or picnicker into an expert and popular camp chef who can turn out enchanting food with a minimum of fuss and muss.

ORGANIC CHEMISTRY—Melvin J. Astle and J. Reid Shelton—Harper, 771 p., illus., \$7.50. A full-year course covering theoretical aspects and applications in industry, including modern electronic applications.

PASCAL: His Life and Works—Jean Mesnard—Philosophical Library, 208 p., illus., \$3.75. A biography of a man who was scientist, mathematician, man of the world and mystic.

PATIENTS IN PUBLIC HOSPITALS FOR THE PROLONGED CARE OF THE MENTALLY ILL, 1950—National Institute of Mental Health, 4 p., paper, free upon request direct to publisher, Bethesda 14, Md. About 600,000 persons were under treatment in these hospitals at the end of 1950. It costs about \$2.12 per patient per day to take care of them.

PHEOCHROMOCYTOMA AND THE GENERAL PRACTITIONER—Joseph L. DeCourcy and Cornelius B. DeCourcy—DeCourcy Clinic, 165 p., \$4.00. Describing the hypertensive disorder known to physicians as "the great mimic," because it masquerades so often as essential hypertension or malignant hypertension or some other ill.

PHILIPPINE ZOOLOGICAL EXPEDITION: 1946-1947: Mammals—Colin Campbell Sanborn—Chicago Natural History Museum, 69 p., illus.,

paper, \$1.50. The collections included some 3,486 specimens. There are 106 species and subspecies represented, of which 15 are new.

THE PHILOSOPHY OF SCIENCE: An Introduction—Stephen Toulmin—Hutchinson's University Library (Longmans, Green), 176 p., \$2.25. Telling the layman how to understand the words of scientists, especially when they use familiar terms in new and strange ways.

PLEISTOCENE EOLIAN DEPOSITS OF THE UNITED STATES, ALASKA AND PARTS OF CANADA—National Research Council Committee for the Study of Eolian Deposits, James Thorp and H. T. U. Smith, Co-Chairmen—Geological Society of America, two wall maps, scale 1:2,500,000, one inch to 40 miles, \$3.00.

A PROGRAM OF FINANCIAL PLANNING AND CONTROLS—The Monsanto Chemical Company—American Management Association, 55 p., paper, \$1.25. The Monsanto Chemical Company manufactures and sells a broad range of chemicals and plastics.

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RADIO AND RADAR TECHNIQUE—A. T. Starr—*Pitman*, 812 p., illus., \$15.00. To reduce the essentials of the radio-electronic field to the scope of a single volume, the work is restricted to methods and techniques only. No applications are described and tables of data are not included. For engineers.

RECORD OF THE ROCKS: The Geological Story of Eastern North America—Horace G. Richards—*Ronald Press*, 413 p., illus., \$6.00. Telling how rocks are formed and how to read the earth's history in them. More attention than usual is devoted to the Mesozoic and Cenozoic periods to capitalize on the fact that fossils of these dates are particularly abundant on the Atlantic Coast.

REPORT OF THE COMMITTEE ON THE MEASUREMENT OF GEOLOGIC TIME 1951-1952—John Putnam Marble, Chairman—*National Academy of Sciences-National Research Council*, 151 p., paper, 1.50. Reporting activity during the year in measuring geologic time by various new and old methods.

RESEARCH ACTIVITIES OF THE TEXAS ENGINEERING EXPERIMENT STATION FOR 1950-51 and 1951-52—Arthur W. Melloh, Ed.—*Texas Engineering Experiment Station*, 41 p., illus., paper, free upon request direct to publisher, College Station, Texas.

SCIENCE FACILITIES FOR SECONDARY SCHOOLS: Guiding Principles and Suggestions for Planning and Developing Instructional Facilities for Science Teaching—Philip G. Johnson—*Govt. Printing Office*, Office of Education Misc. No. 17, 38 p., illus., paper, 25 cents. To aid those concerned with science teaching and school housing to plan the best layout.

SCIENCE VS. CHIROPRACTIC—Kathleen Cassidy Doyle—*Public Affairs Committee*, 28 p., illus., paper, 25 cents. It is estimated that there are 20,000 chiropractors in the United States, and they claim some 30,000,000 patients. This booklet points out that there are many ills for which the chiropractor offers no cure and for which "spinal adjustment" is not a successful treatment.

SECOND ANNUAL REPORT ON STRESS—Hans Selye and Alexander Horava—*Acta*, 526 p., illus., \$10.00. The second supplement to Dr. Selye's monograph on "Stress." It surveys the entire world literature published during the past year, including more than 4,000 references.

SOCIETY AND THE NURSING PROFESSION: An Introductory Sociology—James M. Reinhardt and Paul Meadows—*Saunders*, 256 p., \$3.50. A textbook to give student nurses an appreciation of social problems, especially those particularly related to their profession.

SOUTH AMERICAN NON-MARINE SHELLS: Further Remarks and Descriptions—Fritz Haas—*Chicago Natural History Museum*, 25 p., illus., paper, 60 cents.

THE STORY OF PEOPLE: Anthropology for Young People—May Edel—*Little, Brown*, 197 p., illus., \$3.00. Explaining the differences and likenesses found in the peoples of the world and telling something of the ways of life they have developed so as to get along in their particular environment.

STRIKES—A STUDY IN INDUSTRIAL CONFLICT: With Special Reference to British Experience Between 1911 and 1947—K. G. J. C. Knowles—*Philosophical Library*, 330 p., \$8.75. The first part of this statistical study is descriptive and the second part is analytical, dealing with the causes and effect of strikes.

STUDENT DEFERMENT IN SELECTIVE SERVICE: A Vital Factor in National Security—M. H. Trytten—*University of Minnesota Press*, 140 p., \$3.00. Each year about 2,200,000 boys and girls reach the age of 18. This book discusses the problem of whether they can best serve the nation by military service, production in industry, or by training in scientific, professional or engineering fields.

STUDENT MEDICINE: Volume I, Number 1—Ralph W. Alexander, Ed.—*Department of Clinical and Preventive Medicine, Cornell University*, 24 p., paper, two issues each school year, \$1.00 per year. Intended to facilitate exchange of ideas between physicians in the health services of colleges and their colleagues elsewhere.

A STUDY OF FUTURE POWER TRANSMISSION FOR THE WEST—U. S. Bureau of Reclamation, 30 p., illus., paper, free upon request direct to publisher, Washington 25, D. C. Showing graphically what the estimated power needs of the West will be, and how electricity can be transmitted over long distances to power-deficient areas for much less than it would cost to move coal.

THE TV TELEFIXIT BOOK: TV Troubles Quickly Solved—John P. Kenneally—*Telefixit*, rev. ed., 64 p., illus., paper, 50 cents. A book in non-technical language for the television set owner to enable him to know what is wrong with his set and, if he has the courage, try to set it right.

THERMODYNAMIC PROPERTIES OF NITROGEN—O. T. Bloomer and K. N. Rao—*Institute of Gas Technology*, 28 p., illus., paper, \$3.50, supplementary "Mollier Chart for Nitrogen" and "Compressibility Chart for Nitrogen" wall charts from above bulletin, 2 charts, \$3.50. Proposals have been made to remove nitrogen from natural gas prior to transmission to increase pipeline effectiveness.

THE TORTOISE BEETLES OF CHINA (Chrysomelidae: Cassidinae)—J. Linsley Gressitt—*California Academy of Sciences*, 158 p., illus., paper, \$2.50. One of the difficulties in identifying these insects is their peculiar changing coloration. It is the result of a combination of structural and functional effects, involving both the reflection of light rays from layers in the cuticle and the presence of body fluid between the layers.

TREATMENT OF MENTAL DISORDER—Leo Alexander—*Saunders*, 507 p., illus., \$10.00. The chief purpose of the book is declared by the author to be to demonstrate as specifically as possible how psychic and physical aids to psychiatric treatment must be used as one instrument of therapy.

THE TREE ON THE ROAD TO TURTOWN—Glenn O. Blough—*Whittlesey House*, 48 p., illus., \$2.00. An attractive book for children presents the biography of an oak tree from the time it was something stirring within an acorn until its wood was made into a ship and a bridge and a house. Animals and birds have parts in the drama.

UNDERSTANDING THE WEATHER: A Revision of Knowing the Weather—T. Morris Longstreth—*Macmillan*, 118 p., illus., \$2.50. With the aid of this book you can better understand "what it is doing" and learn to predict "what it is going to do," or at least know what the official weather predictions are talking about.

USE OF ANTIBIOTICS IN TROPICAL DISEASES—H. W. Brown, Ed.—*New York Academy of Sciences*, 317 p., illus., paper, \$4.00. Bringing together reports of workers in far corners of the world showing which antibiotics are useful against what diseases.

VERTEBRATE ZOOLOGY: An Introduction to the Comparative Anatomy, Embryology and Evolution of Chordate Animals—G. R. de Beer—*Sidgwick and Jackson (Macmillan)*, rev. ed., 435 p., illus., \$5.50. In this text a description of types is followed by the comparative treatment of various organ systems.

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MEDICINE

Home TB Treatment?

Doctors divided in opinion concerning isoniazid and other anti-tuberculosis drugs. Some hold home treatment now possible, others believe hospitals more needed than previously.

► **WHETHER ISONIAZID** and other anti-tuberculosis drugs will make it possible for TB patients to be treated at home, instead of going to sanitariums, was the big question under discussion at the Veterans Administration sponsored conference on tuberculosis treatment held in Atlanta.

One group feels that at last patients can be treated at home, and taxpayers can begin to save on the \$200,000,000 spent annually on tuberculosis hospitals.

The other big group feels hospitals are needed more than ever, because now something can be done for the patients to get them well fast.

Hospital treatment for a few months, until the disease is "stabilized," is considered the ideal by many authorities. The two big advantages are: 1. Rest, which is still important to help the patient fight the infection and the diseased lung recover; 2. Education on how to live to prevent further sickness, once the tuberculosis has been brought under control. Many authorities think this education can only be given in a hospital.

In Baltimore, 358 patients have been benefited by a home treatment program started last June. Most of these patients got streptomycin and PAS (para-amino-salicylic acid) while awaiting admission to a tuberculosis hospital. "Very many" of these survived

the waiting period where formerly they probably would have died before getting into the hospital, Dr. Huntington Williams, Baltimore's Health Commissioner, recently reported.

As further benefits of the program, he said the patients were in favorable condition for successful treatment when they got to the hospital, and their morale improved because they felt better and could, for the first time, feel hopeful about eventual cure of their disease.

Science News Letter, February 21, 1953

• RADIO

Saturday, Feb. 28, 1953, 3:15-3:30 p.m., EST.

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Alan Gregg, vice-president of the Rockefeller Foundation, discusses "Medical Research."

Do You Know?

Wild geese have been known to live as long as 70 years.

Over four tons of raw materials are required to make a ton of steel.

The life of a broom can be doubled if its bristle ends are coated with thinned shellac.

Some passenger car horns are tuned to the musical notes E-flat and G, which are pleasing tones said to carry a maximum distance.

The ability of pilots to react with normal speed at altitudes of 15,000 feet or more depends largely upon the type of food eaten before take-off.

A new watermelon developed at the University of Rhode Island has a rind so tough that it does not burst when the melon is tossed onto a truck.

"Varnish" comes from the word Vernice, the name of a goddess of ancient mythology who had golden amber hair; generally speaking, varnishes have an amber cast.

Some adventurous white conger eels back into a corner of aquarium tanks, stick their tails out of water and feel about; if they can reach the top of the tank, out they come, tail first.

Questions

CONCHOLOGY—How many cone shells are poisonous to man? p. 120.

...

GEOPHYSICS—How does a star's twinkle show position of the jet stream? p. 116.

...

OPERATIONS RESEARCH—How can "growth unit days" make tastier vegetables available? p. 121.

...

PHYSIOLOGY—How does oxygen at rest periods help fatigued athletes? p. 119.

...

TECHNOLOGY—Of what is warm, but itchless, underwear made? p. 122.

...

VITAL STATISTICS—What is the increase of average length of life during the last ten years? p. 120.

...

Photographs: Cover, U. S. Air Force; p. 115, Consolidated Vultee Aircraft Corp.; p. 119, General Electric Company; p. 122, (left), U. S. Navy, (right) U. S. Army; p. 128, Eastman Chemical Products, Inc.

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❁ **GREEN FLANNEL** cloth with adhesive backing covered with gauze can be trimmed to fit the bases of lamps, bookends and what-nots that might scratch fine furniture. The flannel's adhesive is stripped of its protective gauze and is pressed onto the bottom of the article being covered.

Science News Letter, February 21, 1953

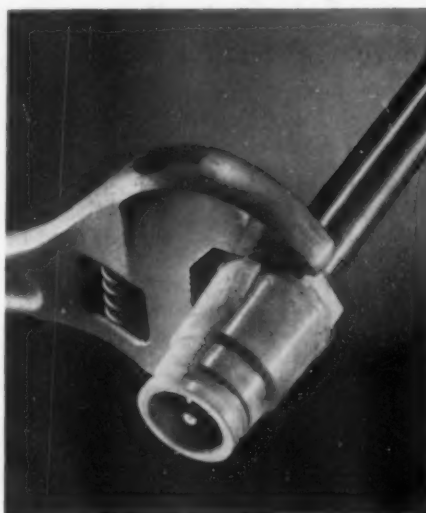
❁ **PROJECTION LAMP** for eight or 16 mm. home movie machines has a smaller, more compact filament and is said to throw up to 20% more light on the screen than any other lamp of equal wattage. The lamp uses a "floating bridge" device to minimize filament distortion as it heats and cools when turned on and off, keeping the projected picture bright.

Science News Letter, February 21, 1953

❁ **GLUE FOR** polyethylene plastic squeeze-bottles permits the housewife to attach ordinary paper labels to the containers. Until now, most existing adhesives have not been satisfactory. Because it is inexpensive to use, the new glue also should be a boon to manufacturers who now must silk-screen or stencil labels on the bottles.

Science News Letter, February 21, 1953

❁ **FOOTVALVE FOR** water pumps, shown in the photograph, is made of a rugged rustproof butyrate plastic so that it will work for months underwater without



corroding or leaking. The valve screws to the end of a pipe extending into the reservoir. Its plastic construction makes it impervious to most oils and greases.

Science News Letter, February 21, 1953

❁ **PICNIC TABLE** folds like a suitcase and has trunk-type latches and a carrying handle. The metal table's steel legs and four canvas-covered camp stools can be stored inside the unit along with food,

utensils or sporting gear. When folded, the table fits easily into an automobile luggage compartment.

Science News Letter, February 21, 1953

❁ **INSULATING INNERSOLE** of foam rubber is lined on the foot side with 100% virgin wool. Especially designed for sportsmen, surveyors and others who must work outdoors in cold weather, the innersole comes only in one large size, but can be trimmed to fit any size shoe or boot.

Science News Letter, February 21, 1953

❁ **ALGAE KILLER** for fish ponds, swimming pools and water systems also controls scum and slime. The chemical is applied in small traces to the water being treated and has a "continuing residual action" that controls algae "for long periods" even though no more is added, the manufacturer states.

Science News Letter, February 21, 1953

❁ **DASHBOARD LIGHT** flashes a warning when motorists drive uneconomically or when the engine dies. Easily attached to the intake manifold of the car, a sensitive vacuum switch flashes the red light when gasoline is wasted by over-acceleration of the car. The signal is clearly visible through the corner of the eye and has an intensity adjustment for day or night driving.

Science News Letter, February 21, 1953

• Nature Ramblings •

► **WINTER IS** commonly thought of as a time of death for the lesser winged and creeping creatures—insects, spiders, centipedes and the like.

We are used to the migration of birds and the hibernation of mammals; but insects we think of as either perishing with the first stiff frost or spinning themselves into sheltering cocoons and sleeping it out.

We are of course well used to seeing surviving flies and mosquitoes flitting about in our houses, and occasional spiders and centipedes furtively on the crawl at odd times during the winter. However, we are prone to take credit to ourselves for involuntarily providing shelter for these undesired guests. Outside, assuredly, insects cannot live through the season's severity!

It comes as a surprise to many of us, therefore, to see occasionally, during a winter thaw, and more frequently as late winter merges into early spring, a considerable population of adult insects creeping or flitting about in the short release that

Insects in Winter



the midday hours give them from the stiff thralldom winter normally imposes.

Almost everyone gets to see winter-wandering ladybird beetles and those odd-shaped but attractively-colored insects, the box-elder bugs. Unobservant indeed must be the person who fails to notice woolly-bear caterpillars hastening, humpity-hump, across sidewalks and patches of bare earth.

Rarer is the treat afforded by the mourning-cloak butterfly, and you have to walk

the winter woods for a chance to see it. There are other butterflies that over-winter in the adult state, but they are smaller and less conspicuously colored than the mourning-cloak, and hence less likely to be noticed. Even the mourning-cloak is not apt to catch your eye unless it is in flight or preparing to take off. Then the light-bordered dark upper surfaces of its wings are visible. When it is resting, whether in active state or chilled into immobility as it clings to a tree, these are folded up together and only the camouflaging, bark-colored undersides are presented.

Some insects that are usually thought of as hibernators do not actually become dormant or even stiffened into inactivity with cold. They have sufficient shelter to permit at least limited wakeful activity. Bees, for example, remain active within their hives or hollow trees, clinging together in masses to conserve the heat their bodies generate out of their stores of food.

Science News Letter, February 21, 1953